$x^3 + 2x^2 - 15x - 36 = (x-3)(x+4)(x+3)$ Factoriser

Signes

$D_{36} = \{\pm 1; \pm 2; \pm 3; \pm 4; \dots\}$ Esquisse

	1	2	−15	−36
1		1	3	−12
	1	3	−12	

	1	2	−15	−36
−1		−1	−1	16
	1	1	−16	

	1	2	−15	−36
2		2	8	−14
	1	4	−7	

	1	2	−15	−36
−2		−2	0	30
	1	0	−15	

	1	2	−15	−36
3		3	15	0
	1	5	0	

BINGO!

	1	2	−15	−36
−3		−3	3	36
	1	−1	−12	0

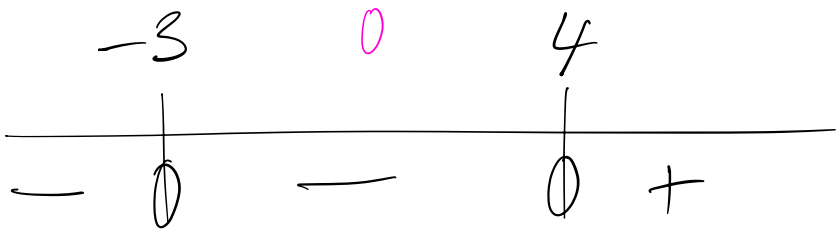
$$P(x) = (x+3)(x^2 - x - 12) = (x+3)(x+3)(x-4) = (x+3)^2(x-4)$$

factorisé ✓

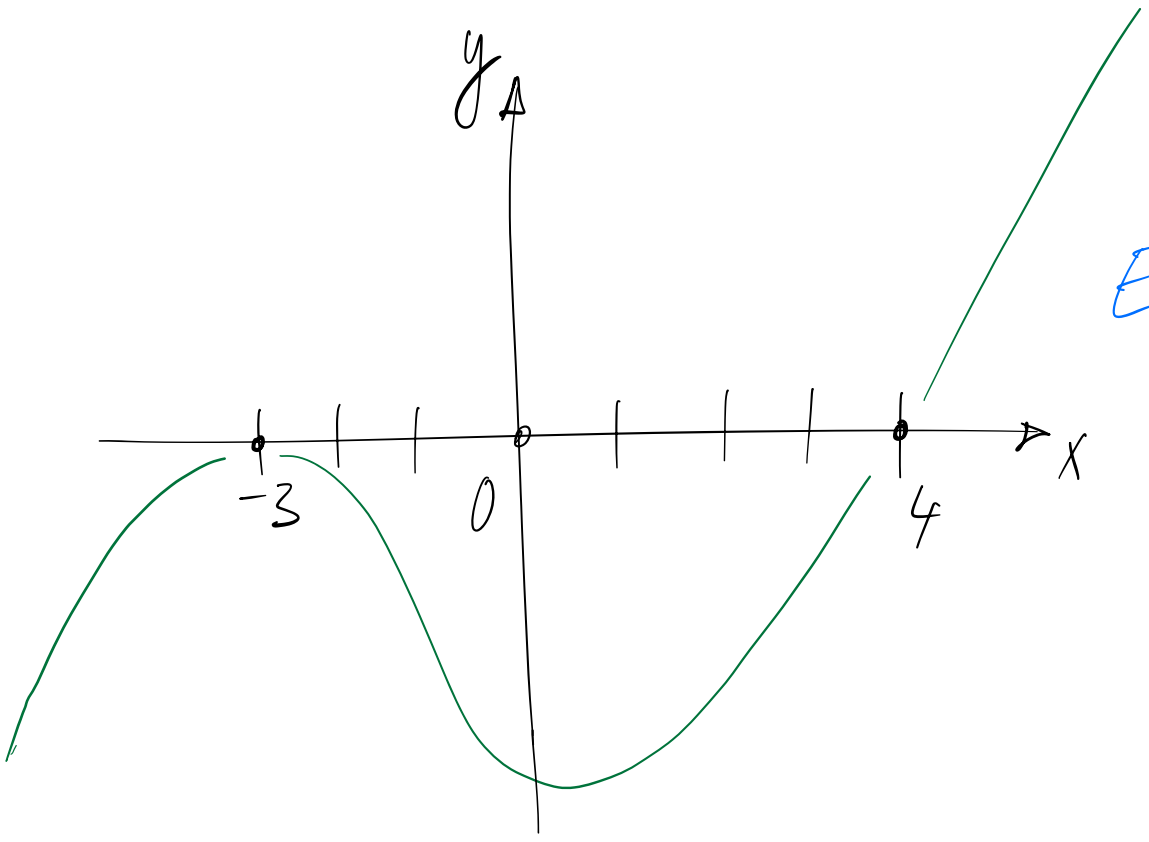
$$\Delta = (-1)^2 - 4 \cdot 1 \cdot (-12) = 1 + 48 = 49$$

$$x = \frac{1 \pm 7}{2} \begin{cases} 4 \\ -3 \end{cases}$$

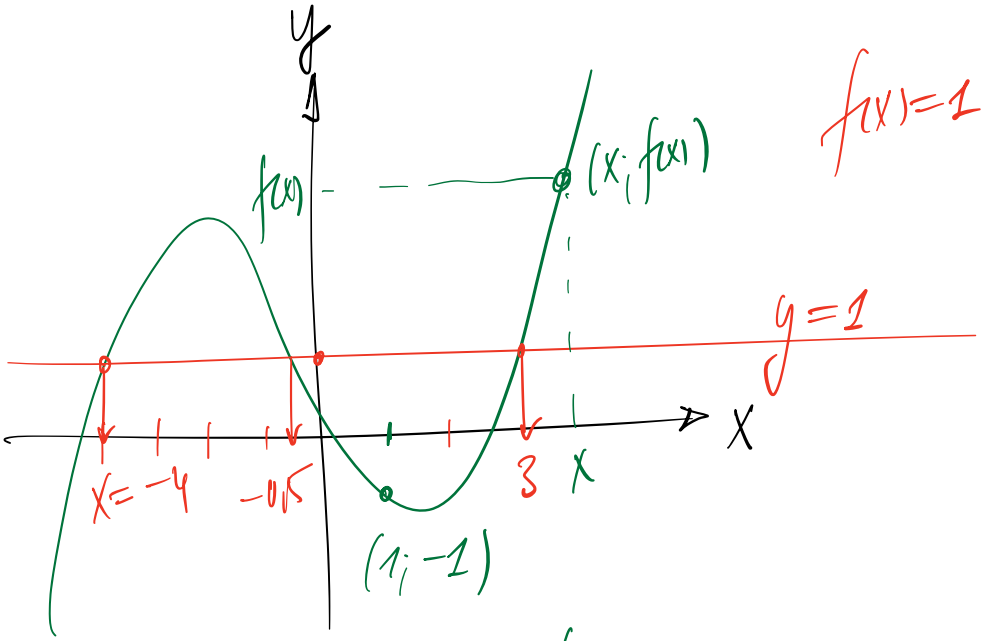
$f(0) = 3 \cdot 3 \cdot (-4) < 0$



Signe ✓



Esquisse ✓



$f(x)=1 \Rightarrow x=-4$

$x=-0,5$

$x=3$

$x=1 \quad f(x)=-1$